

An Overview of the Joint Genome Institute Production Sequencing Line

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The Department of Energy's (DOE) Joint Genome Institute (JGI) Production Genomics Facility (PGF) performs high-throughput Sanger sequencing using whole genome shotgun sequencing methods. The goal of the Production Line is to produce high quality sequence data in order to allow the downstream assembly of whole genome, BAC and metagenomic projects. The Production Line generates end sequence from three different size DNA fragments: 3, 8, and 40 kb, to a depth of 8.5x coverage.

The production line is comprised of three subgroups: Library Support, Sequencing Prep and Capillary Electrophoresis, which consist of about 35 people and perform its work within roughly 12,000 square feet of laboratory space. The production line uses 70 Applied Biosystem 3730xl DNA sequencers and 36 MegaBACE 4500 DNA sequencers to generate approximately 90 Megabases a day. The Applied Biosystem 3730xl sequencers are operated 24 hours a day, 365 days a year, while the MegaBACE 4500 sequencers are run approximately five times a day, five days a week.

For fiscal year 2006, the Production line produced 49.4 million lanes and 32.6 gigabases of sequence with an average read length of 647 bases per lane, sequencing approximately 200 projects. This poster will describe the infrastructure, process steps and quality control methods to ensure the production of high quality sequence.

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